

## CLAIMS

1. A bearing unit for supporting a wheel having a disk comprising:

a stationary ring having a stationary side raceway surface on an inner circumferential or an outer circumferential face, supported by and fixed to a suspension device in the state of use;

a rotary ring having a rotary side raceway surface in a portion opposing to the stationary side raceway surface on an outer circumferential or an inner circumferential face, and having a flange on the outer circumferential face;

a plurality of balls provided between the rotary side raceway surface and the stationary side raceway surface; and

a disk coupled and fixed to the flange, wherein

the allowance of the mutual difference of the diameters of the balls is not more than 1.5  $\mu\text{m}$ , and

at least the finish working is conducted on both sides of the disk under the condition that the disk is coupled and fixed to the flange after the bearing unit for supporting a wheel having a disk has been assembled to suppress the deflection of the disk caused by the rotation of the rotary ring to be not more than 35  $\mu\text{m}$ .

2. The bearing unit for supporting a wheel having a disk according to claim 1, wherein

the allowance of the mutual difference of the diameters of the balls is not more than  $1.0\text{ }\mu\text{m}$  so that the deflection of the disk is not more than  $25\text{ }\mu\text{m}$ .

3. The bearing unit for supporting a wheel having a disk according to claim 1 or 2, wherein

a raceway ring of one of the stationary ring and the rotary ring is an outer ring having a plurality of rows of outer ring raceways on the inner circumferential face,

a raceway ring of the other of the stationary ring and the rotary ring is an inner ring assembling body, in which a shaft member and an inner ring element are combined with each other, having a plurality of rows of inner ring raceways on the outer circumferential face,

one inner ring raceway is formed in a middle portion of the shaft member in the axial direction,

a small diameter step portion, the diameter of which is smaller than the inner ring raceway portion, is formed in an end portion of the shaft member in the axial direction,

the inner ring element has the other inner ring raceway on the outer circumferential face, and

one end face of the inner ring element in the axial direction is held down by a caulking portion, which is formed by

plastically deforming an end portion of the shaft member outward in the radial direction, under the condition that the inner ring element is outwardly engaged with the small diameter step portion.

4. The manufacturing method of manufacturing a bearing unit for supporting a wheel having a disk comprising the steps of:

combining a stationary ring, a rotary ring and a plurality of balls with each other so as to constitute a bearing unit for supporting a wheel;

coupling and fixing a disk to a flange provided on an outer circumferential face of the rotary ring; and

conducting a finishing work on both sides of the disk while the rotary ring is being rotated so as to constitute a bearing unit for supporting a wheel having a disk described in one of claims 1 to 3.